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ABSTRACT

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THE JOHNS HOPKINS UNIVERSITY

REPORT No. 68

THE CENTER FOR THE STUDY OF SOCIAL ORGANIZATION OF SCHOOLS

A SURVEY OF COGNITIVE STYLE IN MARYLAND NINTH GRADERS:

II. TEST ANXIETY

CG 005 482

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MAY 1970

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ABSTRACT

Test anxiety was surveyed among Maryland ninth-graders in six schools in the spring of 1968. The schools differed in racial composition, social class of student body, and in rural-urban location. Test anxiety does not show differences by social class or racial groups when schools have comparable IQ distributions. The level of test anxiety seems determined by students' relative level within the ability distribution of their own school, with those low in anxiety high in the ability-level distribution of the school. Changes in school practices and organizational patterns are suggested that might decrease test anxiety.

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INTRODUCTION

In 1960 Sarason and his associates said that "despite the significances which are attributed to anxiety in the development of the child, systematic research on anxiety is practically nonexistent." The ensuing decade, 1960 to 1970, has seen much research on anxiety, as well as much research on other "cognitive style" variables, but not much knowledge has accumulated as a result of this work. A few measures are now available to assess anxiety in children, but we still know very little about how anxiety affects performance or about how to modify effects of anxiety upon performance. In general there seems to be agreement that moderate anxiety may improve efficiency at simple uncomplicated tasks, but that high anxiety impairs more complex performances.

This paper is mainly concerned with how test anxiety is distributed over sub-groups of the population. Test anxiety rather than generalized anxiety is investigated for two reasons: (1) anxiety appears to be situation-specific, and overall the literature suggests that research on specific kinds of anxiety will be more fruitful than research on generalized anxiety; (2) our main goal in this research is to study some cognitive style variables that may affect school performance, particularly variables that may be modifiable.

To modify anxiety in test situations may be feasible. To try to alter generalized anxiety states of groups of people or even to study them, however, is beyond the purview of this research. It is often speculated that the middle class home is much more effective than the lower class home in grooming its children for school. One way that this could be manifest is in reduced test-taking anxiety in higher social class groups.

Reactions to tests may be important affective variables in school performance. If anxiety impairs test performance, then poor performance will in turn incite more anxiety. There seem to be few events that might occur "naturally" to break up this loop.

"Anxiety" has many meanings. Here it is considered to be a state variable, an enduring condition of the child brought about by past interaction with his environment, particularly as it affects his performance on school tests. Although the fact is seldom noticed, usually anxiety in classroom situations is also "interpersonal anxiety": the student is anxious about his own performance <u>relative</u> to the performance of other members of the class. The child's view of himself is rooted in how <u>others</u> of his classroom

group view him; he seldom is concerned with making comparisons among his own performances, as between yesterday's performance and today's. The child is anxious about how the teacher will react to him and his efforts; the teacher gives rewards or punishments based on test performance. Furthermore a child is anxious about his parents' reactions to his school performance, again a social rather than an individually-determined reaction. Parents are concerned about their child's academic success, or if they are not, as in some lower class groups, the disparity between teacher's concern and parents' concern may be anxiety-provoking in the child. In another way anxiety is a social phenomenon, for it may relate to sibling patterns in a family. A family with only one child may have unrealistic expectations about possible levels of school performance. A family with a first child who performs well in school may expect like performances from younger children. Or a family with one boy and a series of girls may have little interest in any but the boy's performance. These comments are made to emphasize the point that anxiety about school tests is very much socially-determined. In spite of the emphasis on the individual determinants of anxiety in the clinical literature, anxiety related to school situations is based almost entirely in the social milieu of the school and the home.

Generalized anxiety has been more extensively studied than test anxiety, especially in terms of social class variation. One might expect some of the findings for generalized anxiety to be true also of test anxiety, for instance strong social class differences (Hawkes and Koff, 1969) in which ghetto dwellers admit more fears than middle class children. But what is a realistic reaction in one neighborhood is less realistic in another, and social class differences in generalized anxiety must be assessed in this light. Ghetto dwellers are heir to more family disruption, less financial security, greater danger on the streets and in the neighborhood, and a generally low level of control over the environment. Thus when a child in the ghetto is asked "Are you afraid of the dark?" his positive response may reflect more a condition of life than an overreaction. Social class differences in generalized anxiety may not extend to test anxiety, therefore. Testing in schools may actually be much the same from one school to another. The data reported here suggest that the level of test anxiety for an individual depends on his ability ranking within his own school rather than upon his ranking in the population at large and this leads to a reinterpretation of social class differences reported earlier by other workers.

METHOD

The reader should consult Entwisle and Greenberger (1970) for a complete description of how data were procured. Only a brief review is given here.

The survey covered ninth-graders in seven junior high schools in and around Baltimore, Maryland, selected to typify certain social class, racial, or residential segments of the U.S. population. They include (see Figure 1 and Table 2, Entwisle and Greenberger, 1970) inner city blacks and whites (Schools 2 and 7), blue collar blacks and whites (Schools 3 and 6), rural whites (School 5), middle class whites (School 4), and middle class Jewish whites (School 1). Within schools students were stratified on IQ (see Table 1, Entwisle and Greenberger, 1970). Test anxiety data were not procured for all schools. No students in School 1 were tested. Also, no medium-IQ students in School 2 were tested. Altogether 238 boys and 265 girls took the test anxiety scale.

The test anxiety instrument used (see Appendix) was adapted from one devised by Mandler and Cowen (1958). The experimenters read the scale aloud (over a public address system in a large room) and students checked responses. Testing assistants circulated among the

students as the scale was being filled out to make sure students were doing it correctly.

Other procedures were given to the same students before the test anxiety scale. The reader should consult Entwisle and Greenberger (1970) for a description of these.

RESULTS

Characteristics of the Instrument.

The psychometric properties of generalized anxiety scales and test anxiety scales have received considerable attention. Correlations between test anxiety scales (TASC) and generalized anxiety scales (GASC) for elementary school children range from .33 to .69 (Sarason *et al.*, 1960, p. 131). Correlations between test anxiety and IQ are negative and of modest size, -.24 to -.30. Test-retest correlations (over a 4 month interval) average .667 for test anxiety (n=230, p. 296). The test-retest reliability of the short form of the Mandler-Cowen Scale, the scale used by us, is .91 (n=70), and the split half reliability of the longer form is .90 (n=286), (Mandler and Cowen, 1958). Hill and Sarason (1966) find test anxiety has poor stability over longer times from first to fifth

grade. No data are available on long-term stability for older children like the ones in the present survey.

Not much information is available about reliability of test anxiety measures for junior high school students so we will present data from two studies, one the large 1968 survey of Maryland ninth-graders discussed in this and other reports (Entwisle and Greenberger, 1970), and the other a small study of 7th, 8th, and 9th graders of low achievement carried out in a middle class white school in 1968-69. The two studies have no students in common.

1. Homogeneity Estimates.

Reliability (Cronbach α) has been computed for two schools of the ninth-grade survey, School 6, a blue collar black school, and School 4, a middle class white school, within sex-IQ subgroups. The lowest estimate is 0.80, the highest .91, and the remainder lie in the .86 to .90 range. These estimates are consistent with earlier data (Mandler and Cowen, 1958).

2. Test-Retest Estimates.

No test-retest estimates are possible for the 1968 ninth-grade survey because all testing was done on a single occasion. All students in the two lowest-achieving sections of a large junior high school however

(School 4 of the 1968 survey) were administered the 32-item test anxiety scale in the fall of 1968 and again in the spring of 1969, subsequent to the ninth-grade survey. The inter-test interval was approximately 8 months. Seventh, eighth, and ninth graders participated. Some of these sections (7P, 8N, 9N) were included throughout the 1968-69 year in a special guidance program to improve student morale. Mean test anxiety scores did not change appreciably in these specially-treated sections. In fact, changes in test anxiety level look similar for the treated (7P, 8N, and 9N) groups and the untreated (7M, 8M, and 9M) groups. Table 1 shows means and standard deviations for fall and spring testings for all groups and the test-retest correlations over the 8-month period. Since numbers within groups are small, combined figures over grades are presented. The correlations for the treated sections (7P, 8N, 9N) agree with results reported earlier by Sarason et al. (1960). Correlations for the other sections are lower than any reported previously. This may be a consequence of rather poor testing conditions (noise, confustion) at the time of re-test.

Survey Results, Six Schools.

The test anxeity results for six school groups are given in Table 2. Trends noticeable in Table 2 are confirmed in several variance analyses (Tables 3, 4, and 5).

(1) Girls are consistently higher than boys in test anxiety.[1]

(2) There is an inverse relation between anxiety and IQ, with both sexes showing higher anxiety levels at lower IQ levels within all schools.

(3) The relation between anxiety and social class or residential locus and race is complex. In schools with few students of high IQ (inner city black, blue collar black, inner city white) those of medium IQ have low anxiety levels and do not differ much school by school. Students of low IQ in these same schools have levels about 15 points higher. In schools with few students of low IQ (blue collar white, rural white, and middle class white) students of high IQ have low anxiety levels of about the same level as the medium IQ students of the inner city or black schools.

The students of medium IQ in the higher status schools have anxiety levels resembling the low IQ students for lower status schools.

1. Feld and Lewis (1967) find sex differences only for whites. We find no sex x race interaction, and the sex difference for blacks is sizeable, 27.6, 14.7, and 15.3 (see Table 2).

Anxiety level thus seems to be a function of an individual's relative position in his own school.

In schools where the IQ distributions are alike (Tables 3 and 4) the school factor is not a significant source of variance. In schools where the IQ distribution differs (Table 5), significant between-school variance is noted. The social class or residential differences in Table 5 arise entirely from the first two schools (inner city white, blue collar black) compared to the last three (blue collar white, rural white, and middle class white).

To sum up, then, sex is a significant source of variance, and IQ within school is a significant source of variance. Between-school differences are found only when students of the same IQ level find themselves at relatively different levels within their own schools.

Relations with Other Variables in the Ninth-Grade Survey.

a. Sibling Patterns.[2]

As in other analyses in this series of reports, the analysis of sibling patterns is necessarily crude because the size of the sample does not permit control

2. The respondent's position in the sib-set (no older sibs, one older sib, no younger sibs) is the categoric variable used. See page 19, Entwisle and Greenberger, 1970.

on family size. For blue collar black, blue collar white, rural white and middle class white, the only schools where data are complete or extensive enough to analyze, an analysis of variance with sibling pattern and school as factors reveals no significant effects either between schools or between sibling patterns, and no significant interaction (sex and IQ are not being included as factors). In the three schools named last, where IQ distributions are comparable, average scores range from 142 to 164, and there is no discernible relation with sibling pattern.

b. Crandall IAR Scales.

Correlations between the Crandall IAR scales, measuring locus of academic control, and test anxiety appear negligible (Table 6) for the students in the survey, with the exception of black boys of low IQ and inner city white boys. How to interpret this, aside from assuming it is a sampling aberration, is not clear. The Crandall scales are the topic of a report to appear subsequently.

c. School Grades; Four Major Subjects for One Year.

Relationships between test anxiety and girls' grades range from about -.25 to +.25 with two exceptions (white middle class girls: -.43 for Math and -.42 for

Social Studies). With 40 correlations computed altogether, the range and small size of relationships suggests a negligible relationship. For boys, there are several sizeable negative correlations between test anxiety and grades--7 negative relations of -.30 or better. The appearance of more relationships between boys' grades and predictor variables is a recurrent phenomenon, commented upon earlier (Entwisle and Greenberger, 1970). It probably comes about because boys' grades span a broader range and are probably more reliable (they intercorrelate more highly than girls' grades). It appears that girls restrict effort, or channel it, so that grades occur within a narrow range. This tends to attentuate relationships with other variables.

If anxiety is situation-specific, as many suppose, one might expect the relation between test anxiety and grades to be somewhat inconsistent. One teacher, for instance may use tests rather sparingly, whereas another may emphasize tests, administer tests under conditions conducive to high anxiety, and use written tests exclusively in marking students.

Table 6 shows the relationship between test anxiety level and grades for various IQ groups. It is not clear why the negative correlations between test anxiety levels and grades appear to be more numerous for high

IQ students in the County and for medium IQ students in the City. One explanation is as follows: students whose IQ is high relative to the distribution of IQ's within their own school tend to get high grades but it is possible for performance to deteriorate all the way down the scale to a D or an E. Students with IQ's that are "average" or "low" for their own schools tend to get grades in the middle range, around C, and if anxiety causes deterioration, performance can only get poorer by one (D) or two (E) units. This explanation gains credence from an inspection of relations between test anxiety and grades in medium IQ students in the blue collar black and inner city white schools, where medium IQ students are at the top of the school's distribution. These students are the ones who will be getting the A's and B's in these schools and again, a deterioration in performance could yield lower grades of C, D, and E. This means that a deterioration of performance may be less among some students than among others.

DISCUSSION

I. Data on Ninth-Grade Students' Test Anxiety.

The major finding of this survey of Maryland ninth graders who belong to several subcultural groups is that test anxiety level appears to depend much less on a student's absolute performance level than on his relative standing in his own subcultural group or school.

This survey, which used IQ strata within schools as a factor in the study design, makes much clearer than before how IQ, social class, and anxiety interrelate. Overall there are differences between schools only when IQ distributions are not the same from one school to another.

It is well-known that schools adjust their evaluations to their clienteles--a B at Princeton may signify a much higher level of performance than an A at a less elite college (Davis, 1966). The same is true of schools at lower levels; grades within a school are distributed over much the same range, say from A to E in one school, even though the quality of performance at any given point on the scale is very much lower in one school than in another. In view of this, it is not surprising that, within a school, anxiety aroused by tests seems to be a function of an individual's position within the school. An average-ability student

in a ghetto school perceives many people below him, few above him, and so has low anxiety. Another person of the same ability in a school where he perceives few people below him and many people above him tends to have high test anxiety. The social class variation in test anxiety is slight with IQ controlled.

Test anxiety in a school seem to exist in some given amount, like a pool, that then apportions itself among the students of a school in relation to their abilities. Thus the "high" students in one school look like the "high" students in another school, even though what is "high" is defined differently in the two schools. (Alpert and Haber's (1960) finding that test anxiety correlated negatively with ability in homogeneous college populations is consistent with this.) What is stressed in our interpretation is that "high" needs to be defined relative to the student's own reference group, not to the community or to the country at large.

There is not much normative data available for measures of anxiety across SES levels but a few studies exist. We will now compare our results with these.

Comparisons with Other Studies.

Hawkes and Koff (1969) administered a general anxiety scale composed of items from the Children's

Manifest Anxiety Scale and the General Anxiety Scale for Children to 211 middle and upper middle class children and to 249 black inner city children. Significant differences between groups were found. No mention is made of IQ. The significant differences between schools that are observed could arise in two ways, and still not be inconsistent with our results.

(a) Results from tests of general anxiety need not be the same as for test anxiety. Hawkes and Koff note group differences especially in items like "Do you worry that you may get hurt in some accident?" Such items may reflect the different life conditions of low and high SES children. "Life conditions" for school tests may not differ much and so test anxiety may not necessarily show the same variation as generalized anxiety.

Alpert and Haber's (1960) thoughtful review throws doubt on the comparability, and therefore the substitutability, of a general anxiety scale for a specific (test) anxiety scale. For predicting academic performance the specific scales are much better (see Table 2, p. 209, Alpert and Haber). It is hard to defend the validity of anxiety differences across social class groups when the questions have such different implications for the respondents. As already mentioned, a realistic and appropriate degree of caution may be

embodied in the urban child's admission that he is afraid to go out after dark, whereas a similar admission by a suburban child may signify an inappropriate response. There seems to be much less reason to question the "meaning" of questions dealing with test-taking experiences across social groups. Whether or not someone admits to his heart beating faster seems very little determined by anything except the environment within the school and his own reaction to it.

(b) Differential IQ distributions in the schools could easily act to produce the between-school differences noted by Hawkes and Koff. We have repeatedly found a preponderance of low IQ students and a few medium IQ students in low SES schools, and a few medium IQ students and many high IQ students in high SES schools. With schools sampled by Hawkes and Koff, a school difference in anxiety level could come about because differing proportions of people perceive themselves at the "low" or "high" end of the ability distribution within their own school. The same kind of intra-school distribution could also explain black-white differences, black being higher as noted by Palermo (1959), where the blacks are <u>relatively</u> (within their own school) of higher IQ than the whites.

Another recent study (Tseng and Thompson, 1969) of high school males, 42 middle class, 100 lower class,

and 93 lower-lower class boys in McDowell County, West Virginia, used the same measure of test anxiety as we did (a 32-item version of Mandler and Cowen's 1958 scale). Test anxiety levels of 144, 152, and 162 respectively are reported for the three social class groups. Again, without IQ data, there is no way to disentangle the influence of ability level from that of social class, and this outcome could also be completely consistent with our findings, given IQ distributions that are likely within the social class groups Tseng and Thompson studied. Thus, although two recent studies appear to disagree with our data, if one assumes IQ distributions of a likely type the results may be entirely consistent with ours.

II. School Practices and Test Anxiety.

An effective way to decrease anxiety about classroom tests may be to improve achievement, relative achievement. Ability grouping is already practiced in all schools surveyed and this may have already accomplished all that can be accomplished by improving relative achievement. If students of the same ability level are grouped together, the relative ranking of each may be ambiguous. A continuous re-grouping might be more effective than a tight homogeneous grouping, however. Students now tend to take all major subjects with the same persons--the

same persons are together for English, social studies, mathematics and science. The person who performs least well in one area, in math say, is identified and he may have little opportunity but to occupy the same relative position in other subjects even if he should not. Since it is known that intra-individual variability in mental abilities (Hull, 1928) is about 80 percent as large as inter-individual variability, it would seem desirable in large schools to maintain enough anonymity so a student would not be prejudged in one area as a consequence of his performance in another. One possibility is a re-shuffling carried out for each major subject, mixing students from several homeroom sections <u>each</u> differing for each major subject. With computer programs for school scheduling now available, this may be more feasible than it seems.

To alter anxiety levels of students who have spent several years in school experiencing failure and feeding their anxieties seems an all but impossible task. The hardest part of the problem may be that behavior of <u>other</u> persons is chiefly responsible for triggering anxiety in students, so actions of teachers, administrative personnel, and <u>other</u> students would require modification. One approach might be to alter the social dynamics of the classroom and to couple this with exposure to situations where success, rather than failure, is the rule.

Programmed instruction, including modified forms such as self-regulating workbooks, computer-assisted instruction and so on, often accomplishes both goals. This may have very favorable effects on anxiety levels of low achieveing students. "Tests" under these forms of instruction usually depend little on direct inter-person comparisons.

Another promising approach is to modify the traditional roles of student and teacher. There are any number of educational innovations that draw on the basic strategy of role alteration--from John Dewey's project method to the modern simulation game. If students assume the role of teacher they have an increased sense of efficacy. If they are responsible for setting goals, they may be much more successful in achieving goals. Role alteration may also get the student for the first time to make cognitive judgments about the subject matter in some large framework. Poor-achieving students often seem inept at judging what parts of a body of material are important. It is not so much that they cannot learn as that they study the wrong things. They seem inept at the "game" of figuring out the teacher. By pretending they are the teacher, they may become "academically socialized" in ways that successful students are.

Modifications of classroom social structure to reduce anxiety thus seems a readily available strategy although the rationale for changing structure we present here is not often acknowledged. More evaluations of the anxiety-reducing potential of various kinds of classroom reorganizations, emphasizing affective consequences, would be extremely valuable. Up to now reorganizations have been evaluated, if at all, mainly in terms of instructional efficiency.

We are led to pose even more fundamental questions about the way schools function. Is it really necessary to have tests in great profusion? What functions do tests actually serve?

The usual reasons given for classroom testing include: (1) evaluation for placement in a job or in a higher educational setting, (2) feedback for the teacher's instructional needs, (3) reporting to the student, his parents, and others on current status, presumably to provide motivation, (4) using tests as learning vehicles. Before commenting on these usual reasons for giving tests, we see some further reasons, not usually stated, that tests are given: (5) need of teachers to display power in order to compensate for the generally low status that society accords the teachers' role, (6) a false, or at least questionable belief that very frequent tests provide a teacher with

kinds of information not readily available from other avenues, (7) a need to enact rites of passage, where the value of some status position, i.e. a graduate, is determined less by the learning preceding it than by the overcoming of obstacles that may or may not be relevant.

The need for evaluation, point (1) seems vastly overrated, especially in the early grades. The curriculum in schools throughout the country is substantially the same at least up to the seventh grade, and students progress in a straight path from one grade to the next. Therefore, up to the seventh grade tests are hardly needed for evaluation because no options to attend other schools or to make course choices even exist. In other words, no decisions will be based on the tests. The decision to embark on a college preparatory or vocational curriculum at the beginning of high school seems to be the only important decision that could justify much testing. There may actually be few ambiguous cases where test scores are needed even for this. In any case, system-wide tests, the kind apparently least damaging to student morale (Brim, 1969), are those relied upon most for making such decisions, so this evaluation need may be served while inciting little anxiety.

As far as feedback to teachers and parents is concerned, points (2) and (3) above, again the fundamental question seems to be what actions will be taken, or are possible, as a consequence of the feedback. Does the teacher modify his teaching style or his choice of subject matter after examining classroom test results? What does the parent do when told of his child's performance level? Surely the teacher who interacts daily with a class can best find out about gaps in knowledge during the teaching process rather than from test performance. There is little a parent can do when told of his child's performance level. As with the teacher, the parent must depend on interaction with the child to gain some notion of specific deficiencies. Exhortations by parents are probably at best ineffective, at worst alienating.

Although using tests as learning vehicles, point 4, is possible, other forms of instruction are undoubtedly less abrasive and, in our opinion, use of tests for this purpose is contraindicated, at least below the college level.

The remainder of the points, (5), (6), and (7) hardly require discussion. They are reasons that relate not to needs of students but to the needs of others. Alternate ways should be found to satisfy these needs.

Table 1. Test Anxiety: Means, Standard Deviations, and Test-Retest Correlations. For Supplementary Sample (1968-69) of Low Achievers, School 4.

	Fall		Spring			
Grade and Section	Mean	S.D.	Mean	S.D.	n	r
			GIRLS			
7P	188	26.7	179	26.9		
8N	175	50.6	180	32.3		
9N	181	44.6	181	38.5		
TOTAL	182	40.3	180	32.8	22	.68
			BOYS			
7P	154	22.3	150	26.0		
8N	156	22.4	163	41.7		
9N	142	18.1	143	23.3		
TOTAL	151	22.0	153	33.7	30	.63
			GIRLS			
7M	161	23.3	175	21.4		
8M	195	23.7	165	13.3		
9M	164	26.3	161	31.6		
TOTAL	173	26.3	167	24.1	28	.41
			BOYS			
7M	152	28.2	157	20.0		
8M	156	31.8	174	20.9		
9M	140	19.8	153	27.3		
TOTAL	151	28.6	162	24.3	41	.43

Table 2. Test Anxiety; Means and Standard Deviations

			Boys			Girls		
			n	Mean	S.D.	n	Mean	S.D.
Inner City	Black	LoIQ	30	160.7	38.6	30	188.3	30.3
		MedIQ	30	147.6	33.7[a]	33	164.2	42.1[a]
	White	MedIQ	14	137.6	30.1	16	154.3	27.8
Blue Collar	Black	LoIQ	20	156.6	29.8	21	171.3	33.8
		MedIQ	25	136.7	43.5	30	152.0	27.3
	White	MedIQ	29	146.9	36.4	30	174.8	34.6
		HiIQ	19	140.8	37.2	30	153.5	30.9
Rural	White	MedIQ	29	158.0	34.5	28	181.5	22.4
		HiIQ	20	131.9	36.2	30	154.2	30.7
Middle Class	White	MedIQ	22	151.9	39.3	20	178.4	30.5
		HiIQ	30	136.9	39.5	30	163.3	31.7

[a] These results were procured on a different set of Ss from the inner city blacks of average IQ reported for other variables. Tests were administered in 1969-70. These data are not included in variance analyses.

Table 3. Variance Analysis of Test Anxiety for Low IQ Blacks, Inner City vs. Blue Collar

Source	d.f.	F-Value
Sex	1	9.67*
Between School	1	2.41
Sex x School	1	0.90
Residual Mean Square = 1131	97	

* $p < .01$

Table 4. Variance Analysis of Test Anxiety for Medium vs. High IQ Whites, Blue Collar, Rural, Middle Class.

Source	d.f.	F-Value
Sex	1	36.18*
IQ	1	22.90*
School	2	0.30
Sex x IQ	1	0.51
Sex x School	2	0.21
IQ x School	2	1.15
Sex x IQ x School	2	0.40
Residual Mean Square, 1142	306	

* p .01

Table 5. Variance Analysis of Test Anxiety for Average IQ Students: White Inner City, Black Blue Collar, White Blue Collar, White Rural, and White Middle Class.

Source	d.f.	F-Value
Sex	1	22.93*
School	4	5.21*
Sex x School	4	0.33
Residual Mean Square, 1194	233	

* $p < .01$

Table 6a. Girls. Correlations between Test Anxiety and School Grades; Between Test Anxiety and the Crandall (IAR) Scales.

							Crandall	
			Eng.	S.S.	Math.	Sci.	Success	Failure
Inner City	Black	LoIQ	.01	.06	-.17	-.12	-.45*	-.12
		MedIQ	[a]				[a]	
	White	MedIQ	-.06	.06	.08	-.25	-.08	.24
Blue Collar	Black	LoIQ	-.15	-.17	.21	.24	.20	.07
		MedIQ	-.24	-.18	.03	-.12	.11	-.06
	White	MedIQ	.01	.08	-.01	-.08	-.18	-.06
		HiIQ	-.11	-.04	-.09	-.25	-.10	-.15
Rural	White	MedIQ	-.04	.08	-.25	-.15	-.19	-.10
		HiIQ	-.20	-.23	.01	-.16	-.09	.26
Middle Class	White	MedIQ	.11	-.08	-.43*	.02	.07	.16
		HiIQ	-.16	-.42*	-.21	-.17	-.06	-.04

[a]Not available

*Significant at or beyond the 5 percent level, two-sided.

Table 6b. Boys. Correlations between Test Anxiety and School Grades; Between Test Anxiety and the Crandall (IAR) Scales.

							Crandall	
			Eng.	S.S.	Math.	Sci.	Success	Failure
Inner City	Black	LoIQ	.18	.14	-.08	.17	-.37	-.34
		MedIQ	[a]				[a]	
	White	MedIQ	-.25	-.15	-.49	-.05	-.53 *	-.01
Blue Collar	Black	LoIQ	.08	.06	.11	.09	.05	-.46
		MedIQ	-.39*	-.31	-.25	-.31	.20	.11
	White	MedIQ	-.03	.04	.21	.35	-.05	.12
		HiIQ	-.15	-.32	.13	-.14	.20	.22
Rural	White	MedIQ	.02	.00	-.11	-.17	.11	.03
		HiIQ	-.19	-.49 *	-.02	-.47 *	-.26	.42
Middle Class	White	MedIQ	-.05	-.21	.02	-.13	-.08	-.01
		HiIQ	.02	.08	.12	-.14	-.13	.17

[a]Not Available

*Significant at or beyond the 5 percent level, two-sided.

Table 7. Correlations between Test Anxiety and Grades for Groups Where Schools Have Similar IQ Distributions.

	n	Eng.	S.S.	Math.	Sci.
High IQ Boys (County)	69	-.10	-.21	.08	-.22
High IQ Girls (County)	90	-.13	-.22*	-.06	-.20
Average IQ Boys (County)	78	.02	-.05	.03	-.06
Average IQ Girls (County)	77	.01	.06	-.15	-.07
Average IQ Boys (White, City)	14	-.25	-.15	-.49	-.05
Average IQ Girls (White, City)	16	-.06	.06	.08	-.25
Average IQ Boys (Black, City)	25	-.39*	-.31	-.25	-.31
Average IQ Girls (Black, City)	30	-.24	-.18	.03	-.12
Low IQ Boys (Black, City)	50	.12	.08	.01	.11
Low IQ Girls (Black, City)	51	-.22	-.12	-.20	-.18

*Significant at or beyond the 5 percent level, two-sided.

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APPENDIX

THE TEST ANXIETY SCALE

THE JOHNS HOPKINS UNIVERSITY
Opinion Sheet

Code # _____ Date _____

Many people have been interested in how students feel about tests and about taking tests. This questionnaire is designed to let you tell us how you feel about them. We are particularly interested in how people differ in their feelings about tests.

The value of this questionnaire will in large part depend on how frank you are in stating your opinions, feelings, and attitudes. Needless to say, your answers to the questions will be kept strictly confidential; they will not be made known to any teacher or anyone else in the school system.

These questions may not be like any you have seen before. For each question there is a line and you are supposed to put a mark on the line to show how you feel. The question below about swimming shows how the questions are written.

I like to swim in the summer

Like very much — Midpoint — Do not like

You mark a vertical line to show how much you like to swim in the summer.

The midpoint is only to help you. Do not hesitate to put a mark on any point on the line as long as that mark shows the strength of your feelings.

Several kinds of tests are talked about in the questions. By "aptitude test" we mean the tests that all of you have probably taken at some time while in school like the Iowa tests. These are usually tests for which you cannot prepare and for which you cannot study. By "tests in a course" we mean the tests given to you during the term which your teacher announces in advance. These are tests covering material you have had in class; tests for which you can prepare. If we just say "tests" we mean all kinds of tests.

READ EVERY QUESTION CAREFULLY
ANSWER EVERY QUESTION
PLEASE DO TELL US HOW YOU REALLY FEEL

Answer the questions quickly. Do not spend too much time on any one question. You will have time to complete the questionnaire. Raise your hand if you have any questions and we will try to answer them. ANSWER THE QUESTIONS AS YOU FEEL.

GO AHEAD TO THE NEXT PAGE

1. I usually expect to do poorly on a test in a course.

Do not expect to do poorly	Midpoint	Expect to do poorly

2. Before taking an aptitude test, I feel fairly confident that I will do well.

Feel Confident	Midpoint	Do not feel confident

3. Before taking an aptitude test, I am aware of an uneasy feeling.

Do not feel uneasy	Midpoint	Feel uneasy

4. I find myself thinking about other things while taking a test.

Do not think about other things	Midpoint	Think about other things

5. Before taking an aptitude test, I tend to worry.

Tend to worry	Midpoint	Do not tend to worry

6. While taking an aptitude test, I do not perspire more than I do at other times in school.

Do not perspire	Midpoint	Perspire more than at other times

7. Before taking a test in a course, I feel fairly confident that I will do well.

Feel confident	Midpoint	Do not feel confident

8. After I have completed an aptitude test, I worry about how well I have done.

Worry about how well	Midpoint	Do not worry about how well I have done

9. While I am taking a test, I find that I cannot seem to sit still.

Sit still easily	Midpoint	Cannot sit still

10. When the teacher announces that a test is going to be given, I become afraid that I am going to fail - that I will do poorly.

Become afraid that I will fail	Midpoint	Do not become afraid that I will fail

11. While taking a hard test, I find that I tend to forget facts that I thought I knew very well.

Do not forget facts	Midpoint	Forget facts

12. Before taking a test, I worry about the possibility of failing it.

Do not worry about failing it	Midpoint	Worry about failing it

13. While taking an aptitude test, I wonder about how well I am doing.

Do not wonder about how well I am doing	Midpoint	Wonder about how well I am doing

14. Before taking a test in a course, I am aware of an uneasy feeling.

Do not feel uneasy	Midpoint	Feel uneasy

15. While taking a test in a course, I am aware that my heart is beating faster.

Heart beats faster	Midpoint	Heart does not beat faster

16. While taking an aptitude test, I worry about the possibility of failing it.

Worry about failing	Midpoint	Do not worry about failing

17. Before taking a test in a course, I tend to worry.

Tend to worry	Midpoint	Do not tend to worry

18. I expect myself to do better with difficult problems given as homework than with the same probelms given as a course test.

Do better with the problems on a test	Midpoint	Do better with the problems given as homework

19. After I have completed a test in a course, I worry about how well I have done.

Worry about how well I have done	Midpoint	Do not worry

20. Before I begin to answer the questions on a test in a course, I am aware that my heart is beating faster.

Heart does not beat faster	Midpoint	Heart beats faster

21. After taking a test in a course, I do not feel very confident that I have done my best.

Do not feel confident	Midpoint	Feel very confident

22. While taking a test in a course, I find it difficult to concentrate on the questions because I am concerned with how well I am doing.

Do not find it difficult to concentrate	Midpoint	Find it difficult to concentrate

23. I feel that how I do on a course test shows what I really know in the subject.

Does not show what I know	Midpoint	Shows what I really know

24. While taking a test in a course, I find myself thinking about how well I am doing on it.

Do not think about how well I am doing	Midpoint	Think about how well I am doing

25. While taking a test in a course, I worry about the possibility of failing it.

Worry about failing	Midpoint	Do not worry about failing

26. Sometimes while taking a test, my mind goes blank.

Mind does not go blank	Midpoint	Mind goes blank

27. After taking a test in a course, I feel fairly confident that I have done well.

Do not feel confident	Midpoint	Feel confident

28. Before I begin an aptitude test, I often feel that I cannot do well.

Feel that I cannot do well	Midpoint	Feel that I can do well

29. Even though I prepare for a course examination, I expect to do poorly on it.

Expect to do poorly	Midpoint	Do not expect to do poorly

30. While taking a test in a course, I wonder about how well I am doing.

Do not think about how well I am doing	Midpoint	Wonder about how well I am doing

31. I usually expect to do poorly on a course test.

Expect to do poorly	Midpoint	Expect to do well

32. While taking an aptitude test, I am aware that my heart is beating faster.

Heart beats faster	Midpoint	Heart does not beat faster

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